REMARKS

Favorable reconsideration of this application, in light of the preceding amendments and following remarks, is respectfully requested.

Claims 1-24 are pending in this application. Claims 13-14 are amended. Claims 1, 12, 19 and 22 are the independent claims.

Applicants note with appreciation the Examiner's acknowledgement of the Applicants claim for foreign priority and that certified copies of all priority documents have been received by the U.S.P.T.O.

Applicants also note with appreciation the Examiner's indication that the drawings filed February 28, 2006 have been accepted and that the references cited in the Information Disclosure Statements filed February 28, 2006 and March 27, 2006 have been considered.

DESCRIPTION OF AN EXAMPLE EMBODIMENT

A non-limiting example embodiment is described to assist the Examiner in understanding the function of the present application and the differences between the invention s claimed and the prior art of record. Applicants submit that this description is only to assist the Examiner's understanding and should not limit any of claims 1-24 in any way. Instead, each claim should be interpreted solely based upon the limitations presented therein.

Example embodiments relate to a method and device supporting an electrophysiology catheter application in the heart, wherein electroanatomical 3D mapping data of an area of the heart is used to visualize the areas of the heart and this area is treated. A 3D image data of a body region containing the area to be treated is initially recorded by means of a tomographical 3D imaging method before the catheter application is carried out. From the 3D image data, a 3D surface

profile of objects, for example, one or more heart chambers or vessels in the area to be treated, is extracted by segmentation. The 3D image data representing the 3D surface profile, is associated in the correct position and dimension with the electroanatomical 3D mapping data provided during the catheter application by a registration module. The 3D mapping data and at least the selected 3D image data are then visualized superimposed on one another in the correct position and dimension in a visual representation during the catheter application.

According to example embodiments, a device for performing the above discussed example method may comprise one or more input interfaces for the electroanatomical 3D mapping data and the 3D image data recorded by means of an imaging topographic method. The device includes a segmentation module for segmenting the 3D image data in order to extract a 3D surface profile of objects contained inside the volume recorded by means of the 3D image data. This segmentation module is connected to a registration module. The registration module correlates the electroanatomical 3D mapping data and the 3D image data representing the 3D surface profile with the correct position and dimension. The registration module is connected to a visualization module which superimposes the 3D mapping data and at least the 3D image data representing the 3D surface profile on one another in correct position and dimension, for visualization by means of a display device, for example, a monitor or projector. Put differently, the registration module automatically registers or adjusts the 3D surface profile of the 3D image data to the 3D surface profile of the 3D mapping data.

Due to this superposition of the 3D surface profile, by means of which the morphology of the area to be treated or being treated is reproduced in good quality, and with the electroanatomical 3D mapping data recorded during the catheter application, a better orientation and more accurate details are conveyed to the operator of the catheter during the catheter application as compared to the

previously known methods of visual support. The present device does not require a catheter in an imaging system, e.g. a CT-, or NMR-system, nor a further imaging technique like sonographic methods.

CLAIM OBJECTIONS

Claim 13 is objected to because of the following informalities: the word "anatomatical" is misspelled.

As shown in the preceding section, claim 13 now correctly recites anatomical. Reconsideration and withdrawal of the objection is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 112

Claim 14 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse this rejection for the reasons detailed below.

As shown in the preceding section, Applicants have provided clarifying amendments to claim 14 to distinctly claim the subject matter regarded as the invention.

Applicants, therefore, respectfully request that the rejection to claim 14 under 35 U.S.C. § 112 be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 102

Claims 1-3, 5, 8-9, 12, 14 and 19-24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Packer et al. (US 6,556,695, "Packer").

Applicants respectfully submit that Parker fails to anticipate each and every limitation of claims 1-3, 5, 8-9, 12, 14 and 19-24.

For example, claim 12 recites a device comprising, among other things, a registration module connected to the segmentation module, [the registration module] constructed for an automatic correlation with the correct position and dimension of the electroanatomical 3D mapping data and the 3D image data representing the 3D surface profile, [the automatic correlation carried out] by surface matching of the 3D surface profile from the 3D image data to a 3D surface profile from the 3D mapping data in at least one stage of the registration.

It is alleged in the Office Action at page 3 that FIGS. 1 and 8, column 2, lines 14-60 and column 9, line 21 to column 10, line 36 of Parker anticipate the registration module as required by claim 12.

However, none of the sections cited by the Examiner disclose, teach or fairly suggest a registration module as required by claim 12. For example, in column 9, line 21 to column 10, line 36, Parker teaches selecting high resolution images from a stored 4D model and registering the selected high resolution images with a current real-time image frame as indicated in process block 236 of FIG. 8. Packer fails to teach or fairly suggest "a registration module" as required by claim 12.

Parker is directed to a method of acquiring high resolution image data and reconstructing a high resolution model of subject anatomy. A medical procedure is performed wherein the subject anatomy is imaged in real-time by acquiring low resolution images at a high frame rate. The high resolution model is registered with each acquired low resolution image. Finally, Parker displays the registered high resolution images in real time. In one embodiment, Packer teaches superimposing electrical activation data onto the registered high and low resolution images. The electrical activation data are measured with a plurality of electrodes available on the mapping catheter. Packer, FIGS. 9-10 and column 11 line 33-column 13 line 15.

The location of the mapping basket electrodes 268 are detected in the acquired ultrasonic images and the locations of the electrodes are registered with the high resolution image displayed. This is done by aiming the ultrasonic transducer 30 at each electrode, placing a cursor on an electrode pictures in the image and typing the electrode number indicated on the image by the number of bright spots. Parker, column 12 lines 52-61. Thus, the positions of the electrodes are first manually registered to the low resolution image, which in turn is registered to the high resolution 3D-image. This procedure requires an additional ultrasonic transmitter.

Absent any such teachings, Applicants submit that Parker fails to anticipate and/or render obvious each and every limitation of independent claim 12 and the somewhat similar features recited in independent claims 1, 19 and 22. Claims 2-3, 5, 8-9, 14, 20-21 and 23-24, dependent on one of independent claims 1, 12, 19 and 22, are patentable for the reasons stated above with respect to claims 1, 12, 19 and 22 as well as for their own merits.

Applicants, therefore, respectfully request that the rejection to claims 1-3, 5, 8-9, 12, 14 and 19-24 under 35 U.S.C. § 102 be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 13, 18, and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer, in view of Hemler et al. (A System for Multimodality Image Fusion, "Hemler") and further in view of Williams et al. (DE 19953308-A1, "Williams"). Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully submit that dependent claims 4, 13 and 18 are patentable over Packer, as discussed above, as Packer fails to disclose or fairly suggest all of the features as recited in claims 1 and 12, the independent claims

from which the rejected claims depend. Further, Hemler and Williams would fail to overcome the noted deficiencies of Packer (even if combinable, which is not admitted). Therefore, the combination of Packer, Hemler and Williams fails to render the subject matter of claims 4, 13 and 18 obvious to one of ordinary skill in the art. Applicants respectfully request that the rejection of claims 4, 13 and 18 under 35 U.S.C. §103 be withdrawn.

Claims 10-11 and 15-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer in view of Solomon et al. (US 2003/0018251, "Solomon"). Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully submit that dependent claims 10-11 and 15-17 are patentable over Packer, as discussed above, as Packer fails to disclose or fairly suggest all of the features as recited in claims 1 and 12, the independent claims from which the rejected claims depend. Further, Solomon would fail to overcome the noted deficiencies of Packer (even if combinable, which is not admitted). Therefore, the combination of Packer and Solomon fails to render the subject matter of claims 10-11 and 15-17 obvious to one of ordinary skill in the art. Applicants respectfully request that the rejection of claims 10-11 and 15-17 under 35 U.S.C. §103 be withdrawn.

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer in view of Massaro et al. (2002/0087329, "Massaro"). Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully submit that dependent claim 6 is patentable over Packer, as discussed above, as Packer fails to disclose or fairly suggest all of the features as recited in claim 1, the independent claim from which the rejected claim depends. Further, Massaro would fail to overcome the noted deficiencies of Packer

(even if combinable, which is not admitted). Therefore, the combination of Packer and Massaro fails to render the subject matter of claim 6 obvious to one of ordinary skill in the art. Applicants respectfully request that the rejection of claim 6 under 35 U.S.C. §103 be withdrawn.

Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Packer in view of Shoji *et al.* (US 6,572,476, "Shoji") and further in view of Chiu *et al.* (2004/0233217, "Chiu"). Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully submit that dependent claim 7 is patentable over Packer, as discussed above, as Packer fails to disclose or fairly suggest all of the features as recited in claim 1, the independent claim from which the rejected claim depends. Further, Shoji and Chiu would fail to overcome the noted deficiencies of Packer (even if combinable, which is not admitted). Therefore, the combination of Packer, Shoji and Chiu fails to render the subject matter of claim 7 obvious to one of ordinary skill in the art. Applicants respectfully request that the rejection of claim 7 under 35 U.S.C. §103 be withdrawn.

CONCLUSION

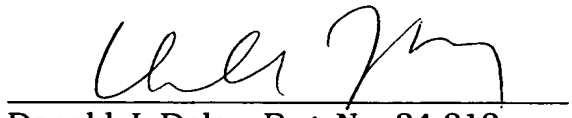
In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending objections and rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By 

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